SYSTEM AND METHOD FOR FACILITATING
INTERACTION BETWEEN PARTICIPANTS IN A TRANSACTION

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BACKGROUND OF THE INVENTION

10   Field of Invention:

This invention relates to network applications and methods for selectively transferring information between users of the network. Specifically, the present invention relates to systems for facilitating delivery of products and services between businesses, delivery agents, and customers via the Internet or other network. This is a continuation-in-part of U.S. Patent Application Serial No. 09/556, 158, filed April 21, 2000.

Description of the Related Art:

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Internet sales are limited by shipping delays and shipping fees, which contribute to consumer aversion to online purchasing. Consumers demand expedient, cost-effective delivery of merchandise and fast access to services ordered via online businesses.

Conventional systems and methods for facilitating immediate merchandise delivery require expensive order fulfillment centers. Consequently, system coverage area is greatly limited by fulfillment center locations. Furthermore, customer product selection is severely limited by fulfillment center inventory. Inventory and geographic expansion are limited by fulfillment center development costs and advertising costs.

Furthermore, such systems and methods often do not accommodate distribution or dispatch of services, such as doctors, taxis, gardeners, mechanics, and so on.

Various companies, such as Shipper.com, Webvan, NetGrocer, and Kozmo attempted to provide expedient merchandise delivery. Unfortunately, many of these companies employed conventional delivery paradigms that relied on building or acquiring expensive infrastructure. Consequently, their coverage areas were often limited by warehouse locations. Offered inventory was limited by fulfillment center size.

Many businesses employing conventional delivery paradigms must use advertising funds to offset expensive shipping fees. Unfortunately, these businesses may fold if advertising funds are depleted before achieving consumer acceptance of their services. Such inefficient delivery paradigms may retard delivery business growth and thereby inhibit Internet commerce expansion.

Hence, a need exists in the art for a system and method that facilitates expedient and cost-effective delivery of products and services between businesses and customers that does not require delivery infrastructure construction nor purchase nor is limited by inventory thereof.

SUMMARY OF THE INVENTION

The need in the art is addressed by the system for facilitating transactions between customers and businesses of the present invention. In the illustrative embodiment, the inventive system is adapted for use with the Internet and includes a first mechanism for initiating a transaction between a customer and a business entity. The business transaction is associated with a product or service. A second mechanism automatically selects a mechanism for delivering the product or service to the customer based on predetermined selection criteria and provides a signal in response thereto. A third

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mechanism automatically provides the product or service to the customer via the selected mechanism for delivering in response to the signal.

In a specific embodiment, the predetermined selection criteria are based on the product or service, the customer, and/or the business entity. The predetermined selection criteria include status information indicative of whether the business transaction is associated with a product or a service or both. The predetermined selection criteria also include a maximum value of W_C, which is defined in accordance with the following equation:

$$W_C = aW_P + bW_R + cW_D,$$

where W_P is a function of delivery prices associated with the mechanism for delivering; W_R is a function of delivery reliability of the mechanism for delivering; W_D is a function of the distance between the mechanism for delivering, the customer, and a business outlet associated with the business entity; and a, b, and c, are customer-adjustable coefficients.

The second mechanism includes a mechanism for automatically selecting a best mechanism for delivering from a plurality of mechanisms for delivering based on a distance between the best mechanism for delivering, the business entity, and the customer. The plurality of mechanisms for delivering include independent delivery agents and/or businesses. In the illustrative embodiment, the best mechanism for delivering is the best messenger service selected from a plurality of messenger services. The distance between the best messenger service, the business entity, and the customer is minimized.

The novel design of the present invention is facilitated by the second mechanism, which may select an independent messenger or other delivery agent to deliver a product or provide a service to the customer based on the distance between the delivery agent or dispatch location thereof, the nearest store that has the product in stock, and the customer. Hence, embodiments of the present invention may employ geographically dispersed

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independent delivery agents to expediently deliver merchandise and/or services from participating business outlets to consumers that order the merchandise and/or service(s). Embodiments of the present invention may reduce or eliminate the need to build or purchase expensive delivery infrastructure by employing pre-existing delivery agent infrastructure. Furthermore, embodiments of the present invention may provide a competitive environment wherein delivery agents may compete for delivery business, which drives down shipping fees.

Hence, the present invention facilitates expedient and cost effective-delivery of products between businesses and customers and does not require the purchase of expensive delivery infrastructure nor is limited by inventory thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram illustrating an exemplary operative scenario of an embodiment of the messenger dispatch system of the present invention.

Fig. 2 is a more detailed block diagram illustrating various functional components of the messenger dispatch system of Fig. 1.

Fig. 3 is a flow diagram of a unique messenger-selection method employed by the messenger dispatch system of Fig. 2.

Fig. 4 is a flow diagram of a Delivery Status Communication and Access (DSCA) method employed by the messenger dispatch system of Fig. 2.

Fig. 5 is a flow diagram of a method for employing geographical information system functionality of the messenger dispatch system of Fig. 2.

DESCRIPTION OF THE INVENTION

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While the present invention is described herein with reference to illustrative embodiments for particular applications, it should be understood that the invention is not limited thereto. Those having ordinary skill in the art and access to the teachings provided herein will recognize additional modifications, applications, and embodiments within the scope thereof and additional fields in which the present invention would be of significant utility.

Fig. 1 is a diagram illustrating an exemplary operative scenario 10 implemented via a messenger dispatch system 14 of the present invention. For clarity, various aspects of the operative scenario 10, such as databases and phone systems are omitted. However, those skilled in the art with access to the present teachings will know where and how to implement the additional components required to meet the needs of a given application. For the purposes of the present discussion, the term *messenger* refers to any independent messenger service, delivery agent, dispatching personnel, or business thereof. Furthermore, independent delivery agents or messengers are business entities whose operations and ownership are sufficiently separate from other entities of the operative scenario 10 to enable competitive forces between the delivery agents to drive down shipping fees and result in other related benefits afforded by the present invention, as discussed more fully below.

The operative scenario 10 includes a delivery dispatch website 12 having a messenger dispatch system 14. The delivery dispatch website 12 communicates electronically with a pool of messengers 16 via email, phone, the Internet 26 or other communications mechanisms (not shown). The delivery dispatch website 12 communicates with merchant websites 20 that have a delivery dispatch button 22. Customers 24 communicate with the member merchant websites 20.

In the present specific embodiment, the Internet 26 facilitates communications between the customers 24, merchant websites 20, the delivery dispatch website 12, and

messengers 16. Those skilled in the art will appreciate that other communications mechanisms instead of or in addition to the Internet 26 may be employed to facilitate communications between the merchant websites 20, the delivery dispatch website 12, and messengers 16, without departing from the scope of the present invention.

The messengers 16 communicate with physical business outlets 28, such as via email, phone, or Internet mechanisms 18, and may send personnel to physically travel to stores, warehouses, restaurants, and other service outlets to obtain products and services 30 associated with the physical business outlets 28. The business outlets 28 may communicate with the customers 24 via telephone and via messengers traveling from the business outlets 28 to the customers 24.

In operation, customers 24 browse the merchant websites 20 for products or services. When a customer 24 decides to purchase a product or service and have the product delivered or the service dispatched, the customer 24 clicks on the delivery dispatch button 22. The delivery dispatch button 22 then activates a form (not shown) wherein the customer enters information pertaining to the desired product(s) or service(s), address or other location information pertaining to the customer 24, and payment information.

Alternatively, the delivery dispatch button 22 may retrieve pre-existing product or service information, address, and payment information from a shopping cart or other e-commerce functionality built into the merchant websites 20. The order information is then transferred to the messenger dispatch system 14 running on the delivery dispatch website 12. The transfer may be implemented via the Internet 26 by employing conventional technologies, such as Common Gateway Interface (CGI). The messenger dispatch system 14 receives the order information and selects a messenger 16 from the member messengers 16 to provide the ordered product(s) and/or service(s) to the customer 24.

The messenger dispatch system 14 employs a unique selection process. In the present specific embodiment, the selection process is based on the distance between

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messengers 16 and the physical outlets 28 that have the desired product(s) in stock or service(s) available and the distance between said physical outlets 28 and the customer 24.

Initially, the messenger dispatch system 14 determines a set of candidate outlets associated with the merchant website 20 at which the customer 24 placed the order. The candidate outlets are physical outlets, which are a subset of the outlets 28. The candidate outlets may include stores or warehouses that have the ordered product(s) and/or service(s) available. The messenger dispatch system 14, as discussed more fully below, accesses product inventory tracking systems associated with the physical business outlets 28 and the corresponding merchant websites 20 to select the candidate outlets.

The messenger dispatch system 14 also includes software and systems, as discussed more fully below, for selecting a subset of candidate messengers from the member messengers 16. The candidate messengers are available messengers that have predetermined coverage areas that overlap the location of the customer 24 and the location of one or more candidate outlets. The customer location is specified in the address or other location information provided to the messenger dispatch system 14 via the delivery dispatch button 22. The messenger dispatch system 14 then picks the messenger from the candidate messengers so that the distance between the selected messenger, a candidate outlet within the coverage area of the messenger, and the customer is a minimum.

In an illustrative embodiment, as discussed more fully below, the messenger dispatch system 14 computes distances between candidate messengers and associated candidate outlets and customers 24. Each candidate messenger is assigned a distance weight (W_D) based on the minimum distance between the candidate messenger, an associated candidate business outlet, and the customer. Smaller distances are associated with larger distance weights. In addition, each candidate messenger is assigned a price weight (W_P) in accordance with delivery rates of the associated messenger. Messengers with higher rates are assigned lower deliver weights. Furthermore, each messenger is

assigned a reliability weight (W_R) in accordance with the reliability track record of the messenger. Less reliable messengers are assigned lower reliability weights.

The messenger dispatch system 14 then combines the weights in accordance with a predetermined equation to yield a combined weight W_C. The available messenger associated with the maximum combined weight ($max(W_C)$) is then selected as the messenger to deliver the product to the customer 24. In the present specific embodiment, the following equation is employed to determine the combined weight W_C:

$$W_C = aW_P + bW_R + cW_D, \qquad [1]$$

where a, b, and c are adjustable coefficients that are set in accordance with the demands of a given application. For example, a form (not shown) associated with the delivery dispatch button 22 may contain a button list or other selection method for allowing the customer 24 to select priorities for deliver time, reliability, and price, which are used to establish the coefficients c, b, and a, respectively.

Use of the above weight-combining method to select messengers for product delivery enhances competition between messengers, since the most reliable, least expensive messengers are most likely to be selected for additional delivery business via the messenger dispatch system 14. Hence, the messenger dispatch system 14 may promote reduced shipping prices and improved delivery reliability by facilitating messenger competition. The tendency of the present invention to promote reduced shipping fees and expedient delivery represent unobvious and unexpected results, which yield significant advantages. Furthermore, the combination of the present invention and the medium for which the present invention is adapted, including the Internet, provides efficient mechanisms by which independent businesses associated with the merchant websites 20 may drive down delivery prices. For example, the merchant websites 20 may pay the proprietor of the dispatch system 14 to reduce or eliminate shipping fees for customers accessing the merchant websites 20 and employing the dispatch system 14.

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Those skilled in the art will appreciate that the messengers 16 may be other types of independent delivery agents, such as Automobile Association of America (AAA) service dispatch personnel, taxi services, and so on, without departing from the scope of the present invention. In addition, equation (1) may be replaced with another formula involving one or more of the variables W_D, W_P, W_R, or additional variables (one or more of the coefficients a, b, and c, may be set to zero), without departing from the scope of the present invention.

Fig. 2 is a more detailed block diagram illustrating various functional components of the messenger dispatch system 14 of Fig. 1. For clarity, various components and interconnections between modules are omitted from Fig. 2, however one skilled in the art will know how to implement the additional components required to meet the needs of a given application.

The merchant websites 20 receive orders for products or services from the customers 24. The ordered products or services are delivered from the business outlets 28 corresponding to the merchant websites 20 via messengers selected from the messengers 16. The messengers are selected via the messenger dispatch system 14. For the purposes of the present discussion, customer order information includes product identification information (such as the name of the product or a corresponding order number), customer location information (such as address), and the name or identification number of the business organization associated with the product (such as Wal-Mart).

The messenger dispatch system 14 includes an optional messenger bidding system 40, which receives an auction-enable signal as input from the merchant web sites 20. The messenger bidding system 40 provides a winning messenger as output to a messenger selection system 42.

The messenger selection system 42 receives order information from the merchant websites 20 in addition to the winning messenger information from the messenger bidding system 40. The messenger selection system 42 provides information pertaining to a selected messenger to a map generator 44. The map generator 44 generates a map

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based on the addresses of the selected messenger, the selected business outlet, and the customer associated with the order.

The messenger selection system 42 communicates with a messenger database 46 and provides order information identifying the requested product(s) or service(s) to the messenger database 46. The messenger selection system 42 also retrieves selected messenger address information and related data, which is selectively provided to the map generator 44. The messenger selection system 42 also receives input from a distance determination system 48. In the present specific embodiment, the input specifies the fastest, most cost-effective, and reliable available messenger that is closest to an associated business outlet and the customer. The distance determination system 48 provides the address of the associated business outlet and the address of the messenger selected by the distance determination system 48 to the messenger selection system 42. Order information is also provided by the messenger selection system 42 to a product availability database 50.

The product availability database 50 communicates with the distance determination system 48, a merchant location database 52, and a merchant inventory tracking system 54 and obtains business outlet locations and product availability information therefrom. The merchant database 52 receives merchant location and product information input from a merchant interface 56.

The distance determination system 48 receives input from the messenger database 46 detailing tentatively available messengers and coverage areas associated with the tentatively available messengers that overlap the delivery address, i.e., location, associated with the customer 24. The distance determination system 48 outputs, to the messenger availability verification system 58, closest messenger identification information (such as location and name and phone number), customer order information, and identification information pertaining to the business outlet near the closest messenger. The messenger availability verification system 58 outputs messenger availability status information to the distance determination system 48.

A messenger bidding system 40 and an automatic messenger email sender and checker 64 receive input from the messenger availability verification system 58. The input includes messenger availability queries, customer order information, nearby business outlets that can immediately provide the ordered product(s) and/or service(s),

5   and nearby tentatively available messengers whose coverage areas overlap both one or more of the nearby business outlets and the location of the customer 24. For the purposes of the present discussion, the location of the customer 24 is equivalent to the delivery destination or shipping address associated with the customer 24.

The messenger bidding system 40 provides output to the messenger selection

10   system 42 specifying the winning messenger selected in accordance with a bidding process as discussed more fully below. The messenger bidding system 40 is selectively enabled via an auction enable signal received from the merchant website 20 associated with the current order.

The automatic messenger email sender and checker 64 communicates with the

15   messengers 16 and exchanges availability queries and responses. The automatic email sender and checker 64 also communicates with an automatic messenger phone calling system 60 that communicates with the messengers 16 via telephone. The automatic messenger email sender and checker 64 provides query results and/or phone call results as input to the messenger availability verification system 58. The messenger availability

20   verification system 58 provides messenger availability results as input to the distance determination system 48.

In operation, customers 24 browse the merchant websites 20 via the Internet. When a customer 24 locates product(s) and/or service(s) that the customer 24 wishes to purchase and have immediately delivered, the customer 24 clicks on the delivery dispatch

25   button 22 (see Fig. 1) or activates another similar or related mechanism.

Often customers 24 employ electronic shopping carts provided via the merchant websites 20. Upon checkout, customers 24 are often given the option to select a delivery method. If the customer 24 elects to employ the delivery dispatch website 12 (see Fig. 1)

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and associated dispatch system 14, then the customer 24 is provided with a form wherein the customer 24 may choose various sub-options. For example, the customer 24 may choose to run a bid among nearby available messengers who will compete to deliver the product(s) and/or service(s) by marking an appropriate check box and clicking a submit button. Clicking the submit button then activates the enable signal to the messenger bidding system 40 and may optionally disable the automatic messenger email sender and checker 64.

Furthermore, the form may include fields wherein the customer 24 may specify the coefficients *a*, *b*, and *c* for equation (1). If the customer 24 elects to run a bid, the auction enable signal is forwarded from the merchant web site 20 to the messenger bidding system 40.

The enable signal enables the messenger bidding system 40 to run an auction wherein the customer's order is auctioned to the messenger offering the highest combined weight W_C. In the present embodiment, the price weight W_P is adjustable by bidding messengers, whereas remaining weights W_R and W_D are predetermined by the messenger dispatch system 14. Alternatively, a new delivery time weight W_T may be added to equation (1) along with a new scaling coefficient *d* yielding the following equation:

$$W_C = aW_P + bW_R + cW_D + dW_T. \qquad [2]$$

The bidding messengers may then control the time weight W_T and the price weight W_P attempting to provide the highest W_C. The time weight W_T incorporates an estimated delivery time. If a messenger continually under estimates the delivery time W_T to obtain orders, their reliability weight W_R will drop. This inhibits messenger cheating, reducing incentives to falsify W_T. This is an unobvious benefit achieved via embodiments of the present invention. In particular, incorporation of the weight W_R improves the fairness of the messenger selection bidding process while also promoting messenger competition, which may improve delivery reliability. Conventional delivery systems and methods

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often lack mechanisms by which competitive forces are employed to reduce shipping fees and increase fairness and reliability of delivery services and associated selection systems. This novel use of competitive forces is facilitated by the fact that the messengers 16 include independent delivery agents that may compete among themselves to obtain business via the dispatch system 14.

The messenger dispatch system 14 selects messengers from the messengers 16 to participate in the bidding process implemented by the messenger bidding system 40. When the delivery dispatch button 22 is pressed, and the corresponding form, including order information and an auction enable or disable indication, is submitted to the messenger dispatch system 14, the order information is transferred to the messenger selection system 42. The auction enable or disable indication is sent to the messenger bidding system 40.

The messenger selection system 42 provides customer address information to the messenger database 46 and order information to the product availability database 50. The messenger database 46 accesses messenger prices, hours of operation, current messenger availability status, delivery times per distance, and coverage areas via a messenger interface 62. The messenger interface 62 may be implemented via a special section on the delivery dispatch website 12 (see Fig. 1), where messengers 16 may provide the delivery dispatch website 12 with current information about their businesses, which is input to the messenger database 46. The messenger database 46 then employs the customer address provided by the messenger selection system 42 to select a set of tentatively available messengers (candidate messengers). The tentatively available messengers are messengers that are currently open for business and are tentatively indicated as being available and messengers with coverage areas that overlap the location of the customer 24 as indicated by the customer address information provided by the messenger selection system 42. The set of tentatively available messengers (and associated information) is then forwarded to the distance determination system 48.

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The product availability database 50 employs the customer order information received from the messenger selection system 42 to determine a set of nearby business outlets associated with the business entity (which may be the owner of the merchant website 20) with which the initial order was placed. The order information includes requested product(s) and/or service(s), the address/location of the customer 24, and an identification number (or name) of the business entity associated with the merchant website 20 at which the customer placed the initial order.

The product availability database 50 checks the merchant product-tracking system 54 to determine the N business outlet locations closest to the location of the customer 24 that have the ordered product(s) in stock and/or the ordered service(s) available. N is a predetermined integer. N may vary in accordance with a predetermined geographic region about the customer address. For example, the product availability database 50 may extract all business outlets within a ten-mile radius of the customer. Alternatively, an upper limit of N may be set. For example, if N is set to ten, then the product availability database 50 extracts the ten closest business outlets to the customer 24. If only one business outlet has the product in stock, then only one business outlet is extracted by the product availability database 50 from the merchant product-tracking system 54. Many merchants already have inventory tracking systems, such as the systems 54 with which the product availability database 50 may interface.

For smaller stores lacking inventory-tracking systems that easily interface with the product availability database 50, the merchant database 52 and merchant interface 56 may be employed. The product availability database 50 may be continually updated via the merchant database 52, which is updated via the merchant interface 56. The merchant interface 56 allows merchants to enter new product information, hours, and business outlet locations. Those skilled in the art will appreciate that the messenger interface 62 and the merchant interface 56 may be implemented via software running on messenger and merchant computer systems, respectively, rather than software running on the dispatch system 14 and associated website 12 (see Fig. 1).

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The product availability database 50 then provides locations and phone numbers of the N selected business outlets along with customer order information to the distance determination system 48. The distance determination system 48 then uses the locations of the tentatively available messengers provided via the messenger database 46 and the locations of the N nearby business outlets having the product(s) in stock and/or the service(s) available (provided via the product availability database 50) to rank combinations of the N business outlets and tentatively available messengers in accordance with combined weights W_C as defined in equation (1). Alternatively, the messengers are ranked solely in accordance with the distance weight W_D.

In some situations, locations of some of the N selected business outlets may fall outside the coverage areas of some of the tentatively available messengers. Combinations of messengers and business outlets wherein the business outlets do not lie within the coverage areas of the messengers are discarded from the ranking list.

Messenger and business outlet locations pertaining to the top M ranking combinations of messengers and merchants are provided to the messenger availability verification system 58. The messenger availability verification system 58 sends availability queries to the automatic messenger email sender and checker 64 and the messenger bidding system 40 along with the M top ranking combinations of messengers and merchants, or a predetermined subset thereof. If the messenger bidding system 40 is enabled via an enable signal from the merchant website 20, then the M selected top ranking messengers (associated with the M top ranking combinations) are contacted via email, chat, or other network functionality (not shown) and asked to enter price and delivery time estimates for the customer order that is up for bid. The messenger bidding system 40 affords messengers 16 the option to improve their original estimates based on competitive estimates from other messengers before the winning messenger is selected. The winning messenger is the messenger with the largest combined weight defined in accordance with equation (2). Location information and messenger identification

information associated with the winning messenger is provided to the messenger selection system 42.

If the customer 24 sets the constants b, c, and d of equation (2) to zero, then the bidding process is based on delivery prices (W_P) alone, assuming the constant a is not also zero. Similarly, if the customer 24 sets the constants b and c to zero, then the bidding process is based on a combination of the estimated delivery times and prices, with relative priority of prices verses delivery times determined via the constants a and d. This system provides an efficient conduit through which market forces may positively affect delivery times, prices, and reliability in accordance with what the customers 24 value most (low prices, reliability, and/or fast delivery time).

If the messenger bidding system 40 is not enabled, then the automatic messenger email sender and checker 64 sends email, chat, or other types of network queries to the messengers 16 to determine the immediate availability status of the M top-ranking messengers 16. The queries are first sent to the highest ranking of the M messengers. If no immediate response is received, then queries are sent to the next highest-ranking messenger of the M messengers. The process repeats until an available messenger is found or none of the M highest ranking messengers immediately respond to the queries, whichever occurs sooner. Alternatively, a set of immediately available messengers may be determined from the M messengers. Location, contact, and identification information pertaining to the messengers of the set may then be provided back to the messenger availability verification system 58 or to the messenger bidding system 40, which runs a bid among the set of messengers when enabled.

Messengers that do not immediately respond to availability queries sent by the automatic messenger email sender and checker 64 are considered temporarily unavailable. If none of the M top-ranking messengers immediately respond to the network queries, then phone calls are placed to the M top-ranking messengers via the automatic messenger phone calling system 60 starting from the highest ranking messenger. The highest ranked messenger of the M highest ranking messengers that

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immediately responds to the network queries or the phone calls placed via the automatic messenger phone calling system 60 becomes the selected messenger.

If the messenger bidding system 40 is enabled, the automatic messenger email sender and checker 64 may be disabled. Alternatively, the messenger bidding system 40 may employ the automatic messenger email sender and checker 64 to select messengers based on their current availability status to participate in the bidding process.

If the messenger bidding system 40 is disabled, the selected messenger(s) is provided to the distance determination system 48. The distance determination system 48 forwards information pertaining to the highest ranking selected messenger and the corresponding business outlet to the messenger selection system 42.

If the messenger bidding system 40 is enabled, then the messenger selection system 42 forwards messenger location, associated business outlet location, messenger contact, and messenger identification information corresponding to the winning messenger from the auction to the map generator 44. The map generator 44 then constructs a map depicting the location of the customer and associated business outlet relative to the selected messenger and then forwards the map to the selected messenger 16. The messenger 16 then employs the map to facilitate delivery of the ordered product(s) and/or service(s). Those skilled in the art will appreciate that the map generator 44 may be omitted without departing from the scope of the present invention.

Hence, information corresponding to selected messengers is provided by the distance determination system 48 to the messenger availability verification system 58 in descending order in accordance with their combined weights W_C. If the messenger with the highest combined weight W_C is not immediately available to deliver the product or dispatch the appropriate service, then the available messenger with the next highest combined weight is checked. The process repeats until an immediately available messenger willing to handle the product delivery or service dispatch is found.

If the messenger bidding system 40 is disabled, then information pertaining to the selected messenger and business outlet provided by the distance determination system 48

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and/or the messenger availability verification system 58, along with order information, is forwarded to the map generator 44. The map generator 44 then generates an appropriate map and forwards the map to the selected messenger 16 to facilitate delivery.

In an alternative embodiment, the distance determination 48 initially selects a tentatively available messenger 16 that is closest to a business outlet that is closest to the customer 24. If the selected messenger is not immediately available as determined via the messenger availability verification system 58, then the next closest messenger is chosen as the selected messenger, and then the current availability status of that next messenger is checked. The process repeats until an immediately available messenger willing to handle the delivery is found. Tentatively available messengers are messengers whose business hours suggest that they are currently open for business.

In a specific scenario wherein $N = 1$, the closest business outlet to the customer 24 that has the product in stock and is associated with the business entity through which the customer placed the initial delivery order is output from the product availability database 50. Candidate messengers are further narrowed by the distance determination system 48 based on whether the coverage areas of the messengers overlap both the locations of the customer and the selected store. Functionality of the messenger dispatch system 14 may be adjusted to allow a customer to select a particular messenger and a particular business outlet for delivery of product(s) or service(s) without departing from the scope of the present invention.

In general, nearby business outlets having the ordered product(s) in stock or service(s) available that are within a predetermined radius about the customer are provided by the product availability database 50 to the distance determination system 48. Tentatively available messengers whose coverage areas overlap one or more of the nearby business outlets and the customer 24 are also provided to the distance determination system 48. The distance determination system 48 then runs a search, which analyzes customer, business outlet, and messenger information and sorts the messengers and corresponding business outlets in order of the total combined weight W_C

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as determined via equation (1), equation (2), or another equation (not shown). Combinations of a messenger and a business outlet wherein locations of the business outlets are outside the coverage areas of given messengers are eliminated from the selection process. The distance determination system 48 searches all the combinations of tentatively available messengers and stores and the single customer location to find the optimal combination of messenger (delivery agent) and store (business outlet). The combinations are listed in order of preference in accordance with their combined weights W_C. The messenger availability verification system 58 starts at the top of the list and moves down until an immediately available messenger is found.

When a messenger 16 is selected for delivery by the messenger dispatch system 14, the phone number and name of the selected messenger 16 are provided to the customer 24 via a response web page. The response web page is sent to the customer 24 from the messenger selection system 42 of the messenger dispatch system 14 in response to the submitting of the dispatch delivery order form (not shown) associated with a merchant website 20. The dispatch delivery order form is provided in response to the pressing of the delivery dispatch button 22 on the merchant website 20 (see Fig. 1).

If the selected messenger does not timely deliver the requested product(s) or service(s), the customer 24 may enter the phone number of the messenger and the amount of time by which the messenger was late into the messenger database 46 via a user interface (not shown) to the messenger dispatch system 14. The messenger database 46 may then adjust the reliability weight W_R assigned to the messenger 16 accordingly.

Addresses employed by the messenger dispatch system 14 may be replaced by other position information, such as Global Positioning System (GPS) coordinates, without departing from the scope of the present invention.

If the messenger dispatch system 14 does not find an available messenger and a business outlet that can provide the product(s) and/or service(s) to the customer, then the customer 24 is informed that the delivery order cannot be handled by the messenger dispatch system 14 at this time. Alternatively, the order may be transferred to a special

operations delivery section (not shown) of the messenger dispatch system 14. The special operations section makes special arrangements to provide the product(s) and/or service(s) via special delivery dispatch systems and methods, delivery personnel and/or delivery dispatch partners.

Fig. 3 is a flow diagram of a unique messenger selection method 70 employed by the messenger dispatch system 14 of Fig. 2. With reference to Figs. 2 and 3, in an initial ordering step 72, the messenger dispatch system 14 obtains order information from the merchant websites 20 for each customer 24. The order information identifies the ordered product(s) and/or service(s), the shipping address or GPS coordinates (shipping destination) of the customer 24, the time of the order, the priority of the order, and the business entity with which the order was placed (such as Wal-Mart). Subsequently, control is passed to an outlet step 74.

In the outlet step 74, the product availability database 50 accesses the merchant product tracking system 54 and/or the merchant database 52 and provides a set of business outlets that have the ordered product(s) in stock or service(s) available. The business outlets are associated with the business entity with which the customer 24 placed the original order. The set of business outlets includes outlets that are located within a predetermined radius about the shipping destination. The predetermined region is application-specific and may be variable. Alternatively, the set of outlets may include only a single outlet that is closest to the shipping destination. Control is subsequently passed to an agent step 76.

In the agent step 76, the messenger database 46 selects a set of tentatively available delivery agents (messengers) that are currently open for business. The distance determination system 48 selects a subset of (or all of) the tentatively available messengers output from the messenger database 46. The subset contains delivery agents whose coverage areas include one or more business outlets of the set of business outlets output from the product availability database 50. Subsequently, control is passed to a weight-determination step 78.

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In the weight-determination step 78, the distance determination system 48 searches the set of business outlets and the subset of delivery agents and ranks each combination of business outlet and delivery agent. The rankings are based on weights in accordance with equation (1). The distance determination system 48 may include factors

5 such as estimated time required for delivery and/or distances between each delivery agent, the associated business outlet, and the shipping destination. Those skilled in the art will appreciate that additional weighting factors, different weighting factors, or a subset of the weighting factors in equation (1) may be employed without departing from the scope of the present invention. For example, the distance determination system 48

10 could rank each combination of business outlet and delivery agent in accordance with the size or experience of the delivery agent. Control is subsequently passed to a selection step 80.

In the selection step 80, combinations of the business outlets and delivery agents as provided via the weight-determination step 78 are tested for immediate availability.

15 The combinations are tested in the order of their rankings, starting the most desirable combinations, until an immediately available delivery agent is found or until the set of combinations is exhausted.

If no immediately available delivery agent is found as determined in an agent-checking step 80, then control is passed to a display step 90. In the display step 90, a

20 page is displayed in the browser employed by the customer 24 via the merchant website 20 indicating that delivery service is temporarily not available for the specified shipping destination and the method 70 ends. Alternatively, the order is handled via a special operations (not shown) section of the delivery dispatch website 12 of Fig. 1.

If an immediately available delivery agent is located, control is passed to a

25 providing step 84. In the providing step 84, the messenger selection system 42 provides the customer with contact information pertaining to the found delivery agent, estimated delivery agent fees, and the estimated time of delivery. The customer 24 is given the option to accept the agent, fees, and delivery time in the acceptance-checking step 86. If

in the acceptance-checking step 86 the customer declines service, the method 70 ends. Otherwise, control is passed to a sending step 88.

In the sending step 88, order information is provided to the selected delivery agent 16. The order information includes the shipping address/location of the selected business outlet, the address/location of the customer, and the order number associated with the ordered product(s) and/or service(s) (so that the delivery agent can pick up the product(s) or obtain or dispatch the service(s) to the customer). The delivery agent is informed that they are the selected delivery agent and should deliver the product(s) and/or service(s) to the customer.

Those skilled in the art will appreciate that an additional pre-selection step may be employed between steps 78 and 82 for selecting a subset of the combinations of delivery agents and business outlets for testing via step 82, without departing from the scope of the present invention. With access to the present teachings, one skilled in the art may implement unique method 70 in software without undue experimentation.

Fig. 4 is a flow diagram of a Delivery Status Communication and Access (DSCA) method 100 employed by the messenger dispatch system 14 of Fig. 2. With reference to Figs. 1, 2 and 4, the DSCA method 100 facilitates online tracking of delivery status information of a plurality of orders over a computer network 14.

For the purposes of the present discussion, a non-web-tracking carrier (non-web carrier) is a carrier that does not provide for order tracking via the World Wide Web or Internet themselves. A web-tracking carrier (web carrier) provides order-tracking capabilities via a carrier website (not shown).

In an initial communication step 102, delivery status information is communicated from the messengers 16 to the messenger database 46 via the messenger interface 62. The messengers 16, which include non-web-tracking carriers, such as conventional couriers or individuals wishing to participate as delivery agents. As disclosed in Fig. 1, the messenger dispatch system 14 runs on a delivery dispatch website

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12. Those skilled in the art will appreciate that websites, such as the delivery dispatch website 12, typically run on a server.

The server 130, which hosts the messenger dispatch system 14 is in communication with suppliers via the merchant product-tracking system 54 and the merchant database 52 and associated merchant interface 56 of Fig. 2, which facilitate populating the product availability database 50. Those skilled in the art will appreciate that the delivery dispatch website 12 of Fig. 1 may be owned by one or more of the suppliers associated with the business outlets 28.

In a subsequent storing step 104, the delivery status information is stored in the product availability database 50, which is stored on the server 130 hosting the delivery dispatch website 12 of Fig. 1 and the associated dispatch system 14.

Subsequently, the method 100 continues to a receiving step 106, wherein the dispatch system 14 running on the server 130 receives a request from one of the customers 24 to view delivery status information for a selected order. The request is received through the merchant website 20 and forwarded to the messenger selection system 42, which determines the messenger that was selected to deliver the order. The map generator 44 then forwards the associated messenger information to the automatic messenger phone calling system 60. The automatic messenger phone calling system 60 calls the selected messenger 16 to determine the delivery status for the order, which is then forwarded to the merchant website 20 for viewing by the customer 24. Alternatively, the automatic messenger email sender and checker 64 is employed to determine delivery status and provide the delivery status to the customer 24.

Alternatively, the customer 24 may directly access the automatic messenger phone calling system 60 or associated automatic messenger email sender and checker 64 via the delivery dispatch website 12 of Fig. 1 upon which the messenger dispatch system 14 is running. The calling system 60 and the checker 64 may provide delivery status information to the customer 24 in response to queries.

After step 106, the method continues to a determining step 108, wherein the method determines whether the selected messenger 16 is a non-web-tracking carrier. This determination is made by concluding that the messengers 16 are all non-web-tracking carriers. Alternatively, the messenger database 46 stores information specifying messenger properties, such as whether the messengers 16 are non-web-tracking carriers. Those skilled in the art will appreciate that the messenger database 46 may be selectively accessed by any of the modules 14-62 Fig. 2, including the automatic status-checking modules 60 and 64, of the system 14.

Subsequently, the method 100 continues to a retrieving step 110, wherein delivery status information is retrieved from the selected messenger(s) 16 via the automatic messenger phone calling system 60 or email sender and checker 64. In a subsequent formulating step 112, if the selected one of the messengers 16 is a web-tracking carrier, the status-checking modules 60 and 64 still suffice to request delivery status information from the web-tracking carrier 16. In step 114, the request for delivery status information from the web-tracking carrier by the modules 60 and/or 64 is transmitted to the carrier 16, which forwards delivery status information back to the modules 60 and/or 64 in response thereto in a receiving step 116. Subsequently, the delivery status information is made available to the customer 24 in a displaying step 118.

Those skilled in the art will appreciate that modules other than the automatic status-checking modules 60 and 64 may be employed. For example, use of methods of electronic communication other than email or telephone, such as Electronic Data Interchange methods, may be employed without departing from the scope of the present invention.

Fig. 5 is a flow diagram of a method 120 for employing geographical information system functionality of the messenger dispatch system 14 of Fig. 2. With reference to Figs. 2 and 5, in an initial information-receiving step 120, the merchant website 20 receives input address information and order information. The information provided by

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the customer 24 to the merchant website 20 may include selection criteria. For example, the selection criteria may take the form of coefficients for equation (1).

For the purposes of the present discussion, the term geocoding is defined as the process of associating geographic-based information with an entity or other information.

5   For example, geocoding of address information involves associating geographic-based information with that address information based on the location detailed by that address information. An example of geographic-based information includes the locations of outlets nearby a customer that have a desired product.

Subsequently, control is passed to a geocoding step 124. In the geocoding step

10   124, the input address information is provided to the messenger selection system 42 of the messenger dispatch system 14 of Fig. 2. The messenger dispatch system 14 then geocodes the input address information by associating it with a selected messenger 16, an ordered product, an associated business outlet 28, and a customer 24 that ordered the product.

15   In a subsequent retrieving step 126, positional information associated with the address information is output, such as to the selected messenger 16. In the present embodiment, the positional information, i.e., location-dependent information, includes location and address information associated with the selected business outlet 28. Such information is output by the map generator 44.

20   Hence, system 14 of Fig. 2 employs geographic information pertaining to a target area to facilitate immediate product delivery. In particular, the geographic information includes customer address information, location of the nearest outlet 28 that has a particular product that the customer 24 wishes to purchase, and the location of and delivery capabilities of delivery agents relative to the location of the customer and the

25   selected retail outlet. Hence, the system 14 provides an integrated system for retrieval and maintenance of spatial information related to regions of business interest.

Those skilled in the art will appreciate that a supplier could use system 14 to better understand their own inventory needs. For example, if the purchasing clients 24

wish to select future delivery dates, such as a few weeks in advance of the order date, a supplier may employ the system 14 to determine, based on the input address information of purchasing clients 24, which warehouse to stock with specific inventory.

Thus, the present invention has been described herein with reference to a particular embodiment for a particular application. Those having ordinary skill in the art and access to the present teachings will recognize additional modifications, applications, and embodiments within the scope thereof.

It is therefore intended by the appended claims to cover any and all such applications, modifications and embodiments within the scope of the present invention.

Accordingly,

WHAT IS CLAIMED IS: